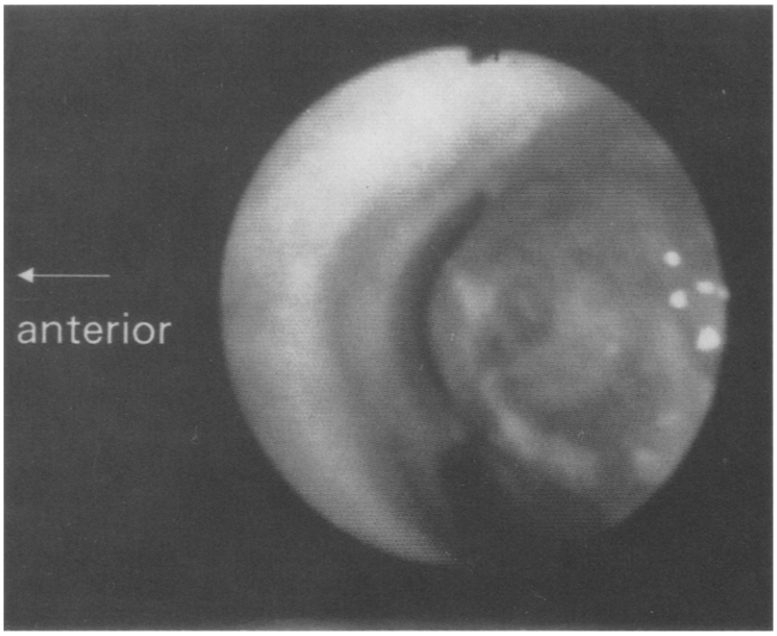

Fig. 2. View through a fiberoptic bronchoscope showing severe extrinsic pressure on the distal trachea from behind. Tracheal mucosa is injected and has a tendency to bleed.

main bronchus to ventilate the left lung selectively. A pedicled pericardial flap was harvested and sutured to the membranous trachea with interrupted Maxon sutures (Davis & Geck, Danbury, Conn.). In addition, a pedicled omentum was harvested through a median incision of the upper part of the abdomen and wrapped around the repaired defect to avoid anastomotic leakage. Pathologically this tumor was characterized as an encapsulated neurilemmoma. The tissue was composed of compactly arranged spindle cells and the nuclei were arranged in palisades that were designated Antoni type A. No postoperative complications developed. A bronchoscopic study performed 8 weeks after the operation showed complete epithelialization of the pericardial patch.

Tumors originating from the vagus nerve are rare. Besznyák, Tóth, and Szende[2] observed two intrathoracic vagal tumors among 741 mediastinal tumors seen in a 25-year period. Das Gupta and colleagues[3] identified two cases of vagal tumor from 303 benign solitary schwannomas. Usually vagal tumors are recognized at the paramedian portion of the mediastinum because of the anatomic situation of the vagus nerve. Intrathoracic neurilemmomas are usually detected as incidental findings at chest radiography. Symptoms, such as hoarseness, chest pain, or cough, however, may occur by involvement of the recurrent laryngial nerve or from compression of the trachea or bronchi.[4] This is the first reported case of a vagal neurilemmoma that grew behind the trachea and compressed it, thereby causing frequent hemosputum.

Benign vagal tumor with hemosputum is rare, but it may be of benefit for the thoracic surgeon to establish methods of diagnosis and treatment of this disease.

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Cardiac cannulation, sodium and water balance, and ANF plasma levels

S. Böhm, MD, R. M. Arendt, MD, B. Reichart, MD, R. H. G. Schwinger, MD, and M. Böhm, MD,
Köln, Germany

Atrial natriuretic factor (ANF) is released in response to atrial distention and has been suggested to play an

From the Klinik III für Innere Medizin, Joseph-Stelzmann Str. 9, D-50924 Köln, Germany.

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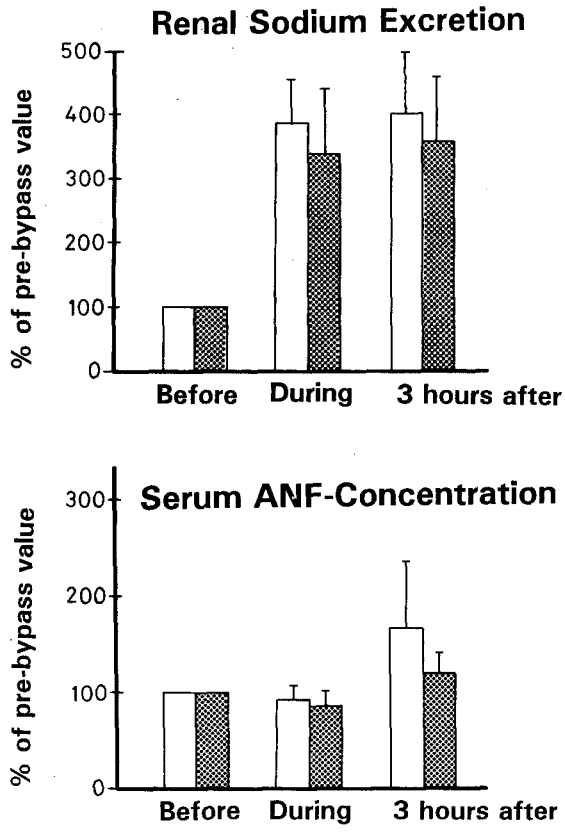

Fig. 1. Renal sodium excretion *(top)* and serum ANF levels *(bottom)* before, during, and 3 hours after cardiopulmonary bypass in percent of prebypass values of patients without *(open bars)* and with *(closed bars)* partial removal of the right atrial appendage. Basal values for *renal sodium excretion* (mean ± standard error of the mean): Patients without atrial appendectomy, 0.64 ± 0.2 mmol/min; patients with atrial appendectomy, 0.59 ± 0.16 mmol/min. Basal values for *serum ANF concentration* (mean ± standard error of the mean): Patients without atrial appendectomy, 13 ± 3 fmol/ml; patients with atrial appendectomy, 9.8 ± 2.8 fmol/ml.

important role in the regulation of sodium and water homeostasis.[1] In an interesting study, Omari, Nelson and Robertson[2] reported reduced sodium and water excretion in patients after coronary bypass grafting in whom an atrial appendectomy was performed. The reduction of sodium and water excretion was accompanied by reduced plasma levels of atrial natriuretic peptide (ANF) after volume challenge with 5% human albumin infusion (12.5 ml/kg intravenously). This study is of great potential clinical relevance, because an alternative approach to venous cannulation, like cannulation of the lateral atrial wall, could be applied to limit damage to the right atrial appendage.

As an extension to this study, we have investigated sodium and water excretion, as well as plasma ANF levels (studied with a radioimmunoassay), after coronary artery bypass grafting in two groups of patients. One group (n = 10) was operated on with cannulation of the right atrium and removal of a small piece of appendage tissue; in the second group of patients (n = 10), venous cannulation was performed through the right lateral atrial wall with careful avoidance of mechanical irritation of the atrium. In the postoperative phase, patients were given optimal medical treatment without experimental interventions like volume loading. Only patients with normal left ventricular function were enrolled to avoid interferences from extraatrially formed ANF.[3] Fig. 1 summarizes the data. No significant difference was noted between the two groups concerning renal sodium excretion before, during, and 3 hours after bypass. Similar results were obtained with urinary output. In addition, no difference was found in plasma ANF concentrations, although pieces of atrial myocardium of 323.8 ± 104.4 mg (range 100 to 1230 mg) containing ANF concentrations of 0.97 ± 0.23 pmol/mg (range 0.55 to 2.58 pmol/mg) had to be removed during atrial cannulation.

Taken together, these data suggest that partial removal of atrial myocardium from the right appendage for venous cannulation during coronary artery bypass grafting does not lead to postoperative disturbances in water and sodium excretion or decreases in plasma ANF levels. Thus cannulation of the right atrial appendage does not lead to serious complications when extreme situations like volume overload or total atrial appendectomy are avoided. Studies addressing such clinically important questions should be performed under appropriate conditions that reflect the clinical conditions of optimal patient care.

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